數種殺蟲劑防除甘藍蚜蟲類及小菜蛾比較試驗[1,2]

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摘要：Orthene®(O,S-dimethyl N-acethyl phosphoramidothioate)，Phosdep® (Phosvel +DDVP) 及 Actellic® (O, 0-dimethyl-0-(2-diethylamino-4-methylpyrimidin-6-yl) phosphorothionate) 等三種新殺蟲劑，防除甘藍之蚜蟲類及小菜蛾均獲優異之效果。尤其Orthene之 0.10—0.05% 兩種濃度均對蚜蟲類有極良好之藥效，爲供試數種殺蟲劑中殺蟲效果最優異者。Actellic 之 0.05%對蚜蟲類之防除效果雖佳，却遠較 Orthene 爲差，但較 Phosdep 之 0.05% 爲優，且差異極顯著。Actellic 0.05% 對小菜蛾之防除較同一濃度之 Orthene 及 Phosdep 略優，但差異不顯著。

爲害甘藍之蚜蟲類，在臺灣南部最常見者爲僞菜蚜，*Rhopalosiphum pseudobrassicae* Davis，和桃蚜，*Myzodes persicae* sulzer，至於菜蚜，*Brevicoryne brassicae* Linne，則甚爲少見。前兩種蚜蟲常在十字花科蔬菜之幼苗期或苗定植後即開始爲害，尤其在每年雨季結束後之9至12月間發生最爲猖獗。在此期間，小菜蛾（*Plutella xylostella* Linnê）亦開始爲害。而小菜蛾之幼蟲乃鱗翅目中爲害十字花科蔬菜害蟲中最難克制者。所以甘藍菜在生長初期，若被此等害蟲爲害，則全區必均失其商品價值。爰將數種新殺蟲劑如 Orthene 75% SP，Phosdep 50% EC (Phosvel 20% +DDVP 30%)，和 Actellic (PP511) 25% EC 等對甘藍蚜蟲類和小菜蛾之防除試驗結果，報告於後。文成後蒙邱主任瑞珍在百忙中核閱斧正，謹此深致謝忱。

材 料 及 方 法

Orthene 75% SP 加水稀釋 750 和 1500 倍，Phosdep 50% EC 稀釋 500和 1,000 倍，Actellic 25% EC 稀釋 500 和 1,000 倍，同時加用數種對照殺蟲劑如 Dibrom 64.5% EC 稀釋 1,000 倍，Elsan 50% EC 稀釋 1,000 倍，Salithion 25% EC 稀釋 500 倍，Salithion 25% WP 稀釋 500 倍及不施藥對照計 11 處理，每處理重複 4 次，計 44 小區，採逢機完全區集設計。

每小區種甘藍 4 行，每行種 7 株，調查時取中間兩行，兩行中之首末兩株亦不調查，故每小區調查10株。甘藍在59年11月 3 日定植，11月13日第一次施藥，每隔 7 至11天施藥一次，調查時係在下一次施藥前一天調查。調查取樣及統計分析方法，均依作者(2)過去對該蟲之防除試驗進行。本試驗共施藥 4 次，調查 3 次。

結 果 及 討 論

由三次調查結果（表 1），供試之殺蟲劑中以 Orthene 75% SP 0.10 和 0.05% 對蚜蟲類之防除效果最爲優異，由第一至第三次調查，蚜蟲之爲害率均爲最低者。第一至第二次調查相隔 7 天，而第二至第三次調查相隔11天，但蚜蟲爲害率之增加並不多，與所有其他供試殺蟲劑比較，其防除效果

1. 本文係59年度經濟部植物保護技術審議會通過蔬菜害蟲防除委託試驗之報告。
2. 試驗報告農試字第六二〇號。
3. 臺灣省農業試驗所鳳山熱帶園藝試驗分所技正兼系主任。

表 1. 數種殺蟲劑對甘藍蚜蟲類之防除效果

Table 1. Effectiveness of the insecticides against the aphids *Rhopalosiphum pseudobrassicae* and *Myzodes persicae* on cabbages

殺蟲劑 Insecticides	有效成份 Active ingredient %	蚜蟲爲害百分率* % of aphid-infested leaves at indicated date			
		Nov. 19	Nov. 26	Dec. 7	平均 Average
Phosdep 50% EC	0.10	13.55	11.88	33.75	19.73
Phosdep 50% EC	0.05	23.86	33.13	70.00	42.33
Actellic 25% EC	0.05	10.06	23.13	58.75	30.75
Actellic 25% EC	0.025	12.86	35.63	60.63	36.37
Orthene 75% SP	0.10	0.63	1.88	3.75	2.09
Orthene 75% SP	0.05	0	7.50	10.00	5.83
Dibrom 64.5% EC	0.0645	14.44	25.00	60.00	33.15
Elsan 50% EC	0.05	21.08	52.50	90.63	54.74
Salithion 25% EC	0.05	13.71	16.25	37.50	22.49
Salithion 25% WP	0.05	9.57	14.38	35.00	19.65
Check(Untreated)		47.26	95.75	100.00	81.00
				LSD 5%	1.84
				LSD 1%	3.31

* 百分率經換算爲轉角函數後統計分析。
Percentages were transformed into angles for statistical analysis.

表 2. 數種殺蟲劑對小菜蛾之防除效果

Table 2. Effectivenss of the insecticides against diamondback moth *Plutella xylostella* on cabbages

殺蟲劑 Insecticides	有效成份 Active ingredient %	平均每株小菜蛾幼蟲數 Average number of larvae per plant at indicated date			
		Nov. 19	Nov. 26	Dec. 7	平均 Average
Phosdep 50% EC	0.10	0.06	0.16	1.06	0.43
Phosdep 50% EC	0.05	0.06	0.31	1.91	0.76
Actellic 25% EC	0.05	0.03	0.31	0.97	0.44
Actellic 25% EC	0.025	0.06	0.34	2.66	1.02
Orthene 75% SP	0.10	0.06	0.06	0.38	0.17
Orthene 75% SP	0.05	0.03	1.06	1.38	0.82
Dibrom 64.5% EC	0.0645	0.03	0.75	2.84	1.21
Elsan 50% EC	0.05	0.27	0.75	3.47	1.50
Salithion 25% EC	0.05	0.16	1.06	2.91	1.38
Salithion 25% WP	0.05	0.13	1.22	4.00	1.78
Check(Untreated)		0.69	3.56	5.31	3.19
				LSD 5%	0.84
				LSD 1%	1.13

均為最優異者。對照區蚜蟲之為害率甚高，第二次調查時即達95.75%，第三次已高達100%，因在臺灣南部於此期間為蚜蟲類之發生盛期。Actellic 25% EC 對蚜蟲類之防治效果，較 Phosdep 50% EC 之同樣濃度為優，且差異極顯著。Phosdep 50% EC 之 0.05% 對蚜蟲類之防除效果僅優於對照殺蟲劑中之 Elsan 50% EC，防除效果並不理想。

小菜蛾在臺灣南部以春季發生較多，此次試驗期間，對照區之小菜蛾密度甚低（表二）。比較各種供試新殺蟲劑彼此間之殺蟲效果，差異均不顯著。但和對照殺蟲劑比較，Actellic EC 0.05% 均優於同濃度之 Elsan EC, Salithion EC 及 Salithion WP。而 Phosdep EC 和 Orthene SP 之 0.05% 均僅優於同濃度之 Salithion WP，惟供試各種新殺蟲劑試驗區之小菜蛾發生與各種對照殺蟲劑比較，有者雖不顯著，但其蟲口密度，一般而言均較低。

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Field evaluation of insecticides for control aphids and diamondback moth on Cabbages

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Summary

Orthene 75% SP, Phosdep 50% EC and Actellic 25% EC were evaluated in field for controlling the aphids, ***Rhopalosiphum pseudobrassicae, Myzodes persicae,*** and diamondback moth, ***Plutella xylostella,*** on cabbages. Four standard insecticides, Dibrom 64.5% EC, Elsan 50% EC, Salithion 25% EC, Salithion 25% WP and untreated check were used The treatments were arranged in a randomized complete-block design with 4 replications.

Four applications were made at 7 to 11 days intervals. The first application was started about 10 days after planting. The criterion for measuring the aphid infestation was made on percentage of leaves infested by the wingless aphids while the diamondback moth damage was determined by counting the number of larvae per plant after each application. Ten plants on each plot were examined in every counting.

Orthene 0.05% was found significantly to be the most effective one in controlling the aphids. Percentage of aphid infestation under two concentrations of Orthene 75% SP has been reduced to the lowest level during the four applications. Actellic 0.05% also performed significantly in controlling aphids better than the same concentration of Phosdep or other standard insecticides and resulted in excellent diamondback moth control. Phosdep 0.05% was the least effective among the three new tested insecticides both in controlling the aphids and diamondback moth.